

## CLAIMS

### WHAT IS CLAIMED IS:

1. An optical component with a low reflectance for ultraviolet light in a wavelength range between approx. 180 nm and approx. 370 nm for a high angles of incidence, comprising:  
a substrate having at least one surface;  
a multilayer system of multiple stacked layers arranged to the at least one surface of said substrate to provide a reduction of reflection, a layer comprising a high refractive or a low refractive dielectric material;  
a first layer contacting the substrate being substantially free of magnesium fluoride and none of the layers having a layer thickness of more than about  $(0.5\lambda)$ , where  $\lambda$  is the working wavelength in the ultraviolet wavelength range.
2. An optical component according to claim 1, wherein none of the layers has a layer thickness of more than about  $(0.35\lambda)$ .
3. An optical component according to claim 1, wherein none of the low refractive material layers has a layer thickness of more than about  $(0.3\lambda)$ .
4. An optical component according to claim 1, wherein the first layer consists substantially of at least one of an oxide, a metal oxide, and aluminum oxide.
5. An optical component according to claim 1, wherein the low refractive material consists substantially of at least one of a fluoride and magnesium fluoride.

6. An optical component according to claim 1, wherein the high refractive material consists substantially of at least one of an oxide, a metal oxide, and aluminum oxide.
7. An optical component according to claim 1, wherein the overall thickness of the multilayer system amounts to less than  $(2\lambda)$ .
8. An optical component according to claim 1, wherein an overall thickness of the low refractive material layers amounts to less than at least one of  $\lambda$  and  $(0.5\lambda)$ .
9. An optical component according to claim 1, wherein the multilayer system does not have more than six layers.
10. An optical component according to claim 1, wherein a ratio between the sum of the layer thicknesses of the low refractive material layers and the sum of the layer thicknesses of the high refractive material is below at least one of approx. 1.5 and approx. 1.2. 112,2
11. An optical component according to claim 1, providing low reflectance in a wavelength range of visible light, wherein the reflectance between approx. 600 nm and approx. 700 nm is less than at least one of approx. 2% and approx. 1%. 112,2
12. An optical component according to claim 1, wherein the reflectance of the optical component is less than at least one of approx. 1% and approx. 0.5% in an incident angle range between  $0^\circ$  and at least one of  $40^\circ$  and  $50^\circ$ .

13. An optical component according to claim 1, wherein the substrate is made of one of fused silica glass and a crystalline fluoride.

14. An optical component according to claim 1, being designed for a working wavelength of about  $\lambda = 248$  nm.

15. An optical component according to claim 1, wherein the reflectance within the working wavelength range covers a bandwidth of more than 1.1 below a given reflectance, wherein the bandwidth is the ratio between the wavelengths of the long-wave limit and the short-wave limit of the wavelength range, in which the reflectance lies below 0.3%.

16. An optical component with a low reflectance for ultraviolet light in a wavelength range between approx. 180 nm and approx. 370 nm for a high angles of incidence, comprising:  
a substrate having at least one surface;

a multilayer system of multiple stacked layers arranged to the at least one surface of said substrate to provide a reduction of reflection, a layer comprising a high refractive or a low refractive dielectric material;

wherein the reflectance of the optical component is less than approx. 1% in an incident angle range between  $0^\circ$  and at least  $40^\circ$ ; and

wherein the reflectance between approx. 600 nm and approx. 700 nm is less than approx. 2%.

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